Intra-Wave Amplitude Gradation for Multi-Bit Data Transmission in Single Waveform

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Introduction

When a single wave of electromagnetism is varied in its amplitude in the context of a single wave, it can carry additional information which is not apparently visible to the receiver. This is not a new concept. If we transmit, for example, a signal at 10KHz and another overlapping signal at 20KHz, the harmonic between them allows for exponentially more data to be carried.

However, in the absence of a harmonic frequency carrying additional information and outside of the context of traditional amplitude modulation, it is possible to embed additional information in individual waves using a method which may be termed Intra-Wave Amplitude Gradation.

Abstract

This approach would entail stepping up the amplitude of a single wave (or reducing it) between the time of the initiation of the wave and its complete formation. This concept is easy to understand as it is sometimes encountered in acoustic science. If you look at a waveform representation of sound in any audio editor software, you may occasionally notice that the portion of the wave in the up-swing of the phase of a recorded sound wave is of greater amplitude than the down-swing. The waves might be touching the upper limits of amplitude which can be handled by the recorder at one side but not the other.

If we purposefully induce such an effect in an EM emission, we can hide information within the transmission which is unlikely to be noticed by the methods and algorithms currently being employed. For example, individual frequency-modulated frequencies are each separately checked and harmonics between frequencies can be identified. Amplitude modulation signals can be detected, however, traditional amplitude modulation involves changing amplitude after at least one (but usually many more than one) individual EM waves are transmitted and then maintaining amplitude over a period of several waves. To this author’s understanding, no one has ever structured a signal broadcast at a single frequency which is amplitude-modulated so that there is a sub-modulation within the context of a single wave in which specific upward inclines or downward inclines in amplitude are applied in the context of a single wave.

It is likely that software used to describe intercepted AM signals will look at the average amplitude of a wave and not the amplitude over such a granular timescale as the intra-wave period. Thus, we can transmit a signal which has a constant property of average amplitude but has variable gradations of intensity within the context of a single wave. This can be visualized as a horizontal line (when there is no gradation) and a succession of lines of

different angles superimposed over that line wherein the center of the line is always hinged in the same place (looking a bit like an asterisk.) A system designed to detect this type of embedded data would likely be able to distinguish between a few dozen different inclinations, meaning that about 24 bits of data could be reliably embedded in each wave in the AM band.

As it is a form of steganography, it would keep the lowest profile if it were designed to match ambient broadcasts from local broadcasters. This would mitigate the probability of the traffic being flagged as interference or as an unauthorized broadcast.

Conclusion

As some degree of this intra-wave amplitude gradation already exists as a result of natural atmospheric phenomena, if a signal is subtle and matched to the ambient noise environment, it should be possible to transmit encoded data embedded within repeated authentic traffic using this unique technique. Security can be further enhanced by utilizing either neutrino-wave pre-processing to enable the content of a future radio wave to be known sufficiently in advance to allow properly synchronized waves to be emitted or by using a low-technology approach such as knowing which radio advertisements play in which sequence on which radio station and having copies of those advertisements available for use as the steganographic substrate.